TRANSMITTAL OF CONTRACTOR'S SUBMITTAL
(ATTACH TO EACH SUBMITTAL)

DATE: 03/30/2012

To:	NAVFAC MIDLANT	From:	Don Conger, PE, AGVIQ-CH2M HILL
	Mr. Greg Pearman		(Contractor)
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SUBMITTAL INFORMATION		
Submittal No.:	049 331100 - Butterfly Valves v2	
☒ New Submittal		☐ Resubmittal
Project:	Interim Emergency Wellhead Treatment Aqua-NY Water Treatment Facility	
Project No.:	N62470-08-D-1006, TO No.: WE23	
Specification Section No.:	33 11 00	
Date of Submittal:	3/30/2012	

SUBMITTAL TYPE:		
☒ Shop Drawing	☐ Sample	☐ Informational
☐ Material Data	☐ Proposed Substitution	☐ Other

The following items are hereby submitted:

Number of Copies	Description of Item Submitted (Type, Size, Model Number, Etc.)	Spec. and Para. No.	Drawing or Brochure Number	Contains Variation to Contract	
				No	Yes
1	Pratt, Groundhog Butterfly Valves, 12 inch MJ	33 11 00, 1.4		☐	☒

The following information about the submission is hereby provided:

Butterfly Valves
Mueller valves were previously approved; however AQUA-NY supplied the Pratt valves instead. The attached Pratt butterfly valves meet all typical ASTM and AWWA standards, and are being provided by AQUA-NY as one of their standard valves of choice. This submission contains a variation to the contract, and therefore government approval is required.

CONTRACTOR hereby certifies that (i) CONTRACTOR has complied with the requirements of Contract Documents in preparation, review, and submission of designated Submittal and (ii) the Submittal is complete and in accordance with the Contract Documents and requirements of laws and regulations and governing agencies.

By: Donald R. Conger

CONTRACTOR (Authorized Signature)

Submittal Review Comments Checklist

PROJECT DATA			
Project Name:	Interim Emergency Wellhead Treatment Aqua-NY	Client:	Naval Facilities Engineering Command, Mid-Atlantic
Project No.:	N62470-08-D-1006 TO No.: WE23	Project Location:	Seamans Neck Road, Levittown, New York
Inspection Date:	3/30/2012	Inspector:	Don Conger, CH2M HILL
Report No:	049	Contractor:	AGVIQ-CH2M HILL

SUBMITTAL DETAILS			
Submittal No.:	049 331100 - Butterfly Valves v2		
Specification Section:	33 11 00	Reviewer Name:	Don Conger, CH2M HILL
Description:	Butterfly Valves	Page:	33 11 00 - 2
Submittal Type:	☒ Shop Drawing ☐ Sample ☐ Information		
Approval:	☒ 1. Approved ☐ 2. Approved as noted ☐ 3. Partial Approval—Resubmit as Noted (resubmittal required) ☐ 4. Revise and Resubmit (resubmittal required) ☐ 5. Not subject to review		

SUBMITTAL LIST		
No.	**Comment**	**Related Spec Paragraph/Drawing**
001	Butterfly Valves provided not listed in the specifications, however meets proper ASTM and AWWA standards and is being provided by AQUA-NY.	33 11 00, 1.4

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DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USN, cn=SHUKIS.CHRISTOPHER.R.1228884312
Date: 2012.04.02 10:44:03 -04'00'

PRATT

Henry Pratt Company

Groundhog®

Butterfly Valves

Valves for the 21st Century

Since 1901

PRATT

A Tradition of Excellence

With the development of the first rubber seated butterfly valve more than 70 years ago, the Henry Pratt Company became a trusted name in the flow control industry, setting the standard for product quality and customer service. Today Pratt provides the following range of superior products to the water, wastewater and power generation industries.

Butterfly Valves: from 3" to 162"

Rectangular Valves: 1' x 1' to 14' x 16'

Ball Valves —
Rubber Seated: from 4" to 60"
Metal Seated: from 6" to 48"

Plug Valves: from 1/2" to 36", 3 ways

Hydraulic Control Systems

Valve Controls

Energy Dissipating Valves and Fixed Energy Dissipaters

Cone Valves

Check Valves

A Commitment to Meeting The Customers' Needs

Henry Pratt valves represent a long-term commitment to both the customer and to a tradition of product excellence. This commitment is evident in the number of innovations we have brought to the industries we serve. In fact, the Henry Pratt Company was the first to introduce many of the flow control products in use today, including the first rubber seated butterfly valve, one of the first nuclear N-Stamp valves, and the bonded seat butterfly valve.

Innovative Products For Unique Applications

Though many of the standard valves we produce are used in water filtration and distribution applications, Pratt has built a reputation on the ability to develop specialized products that help customers to meet their individual operational challenges.

Creative Engineering for Fluid Systems

Pratt's ability to provide practical solutions to complex issues is demonstrated by the following case histories.

Earthquake Proof Valves

Pratt designed and manufactured hydraulically actuated valves for a water storage application so that the valves would automatically operate in the event of earthquakes. This lead to the development of a valve that will withstand forces of up to 6g's.

Custom Actuation/ Isolation Valves

Pratt designed and manufactured valves that would isolate a working chamber in the event of a nuclear emergency during the decommissioning of armed nuclear warheads. The valves were able to close in a millisecond using specially designed Pratt electro-pneumatic actuators.

Valves Designed for Harsh Environments

Pratt designed and manufactured a 144" diameter butterfly valve for the emergency cooling system at a jet engine test facility. The valve was designed to supply water to help dissipate the tremendous heat generated by the engines during testing.

PRATT
Henry Pratt Company

Through experience, commitment and creative engineering, Pratt is uniquely suited to provide superior products for our customers' special needs.
For more information, contact our corporate headquarters in Aurora, Illinois.

Henry Pratt Company

401 South Highland Avenue
Aurora, Illinois 60506-5563
www.henrypratt.com
phone: 630.844.4000
fax: 630.844.4160

Table Of Contents

4" – 20" GROUNDHOG®
BURIED SERVICE BUTTERFLY VALVES

Underground distribution and transmission systems most often require valves of 4" – 20", and GROUNDHOG® models in this size range are specially engineered to be buried and forgotten until needed. Components are selected for long-term reliability, so the valves will provide service life equaling or exceeding that of the pipeline.

A key design feature is the molded-in rubber seat which is bonded to the valve body by a patented Pratt process. Made of a specially compounded Buna-N rubber, the seat is engineered so that no replacement or adjustment is required throughout the life of the valve, under normal operating conditions. The unique seat retention method eliminates the possibility of "ballooning" or "blow-out" of the seat and affords more precise control of circumferential tolerance, which assures bubble-tight valve performance even in the harshest operating environment.

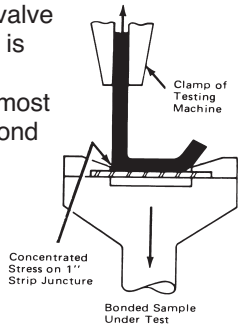
The on-center disc, the only part exposed to water, is streamlined to minimize pressure drop and turbulence. At full open the valves create no more friction loss than a 45° elbow. The disc also provides built-in damage resistance. As the disc approaches the closed position, a high-velocity area is created which "flushes" the seat. The disc itself sweeps particles ahead to keep the seat clean.

Other important design features include: self-adjusting packing which should never need replacing; a corrosion-resistant, one-piece stainless steel shaft; an extra-heavy cast iron body; large, chemically inert nylon bearings which have tested out at more than 100,000 cycles; and a tamper-proof disc centering mechanism which maintains positive disc alignment without play.

GROUNDHOG® valves in 4" – 20" sizes meet all requirements of AWWA C504. A Pratt MDT buried service actuator is standard, and either flanged, mechanical joint, push-on joint, wafer or Victaulic coupling styles are available.

Performance Tested Reliability

To assure a thoroughly reliable valve seat, the Pratt rubber seat bond is tested by the ASTM Test D-429, Method B. This test, one of the most stringent means of measuring bond effectiveness, consists of a minimum 75-pound pull on a 1" sharp line at 90° to the sample. Repeated testing confirms the integrity of the rubber seat bond at over 100 pounds pull.



Groundhog® with mechanical joint ends

TECHNICAL DATA

Sizes:
4" through 20"

Body Style:
Cast iron with ends for Flange, Mechanical Joint, Wafer and Victaulic couplings.
Push on joint (12", 16") and Push on x Flange (12", 16") for C900 PVC and ductile iron pipe.

Pressure Class:
*Class 150B per AWWA Standard C504

Actuators:
Pratt traveling nut design actuator in strict compliance with AWWA C504 latest revision. Specially designed and built for buried service. (Refer to page 12 for design details.)

Service:
Distribution, potable or raw water.

Accessories:
DIVINER® ground-level position indicator, handwheel, extension stem valve box (standard and slipjoint).

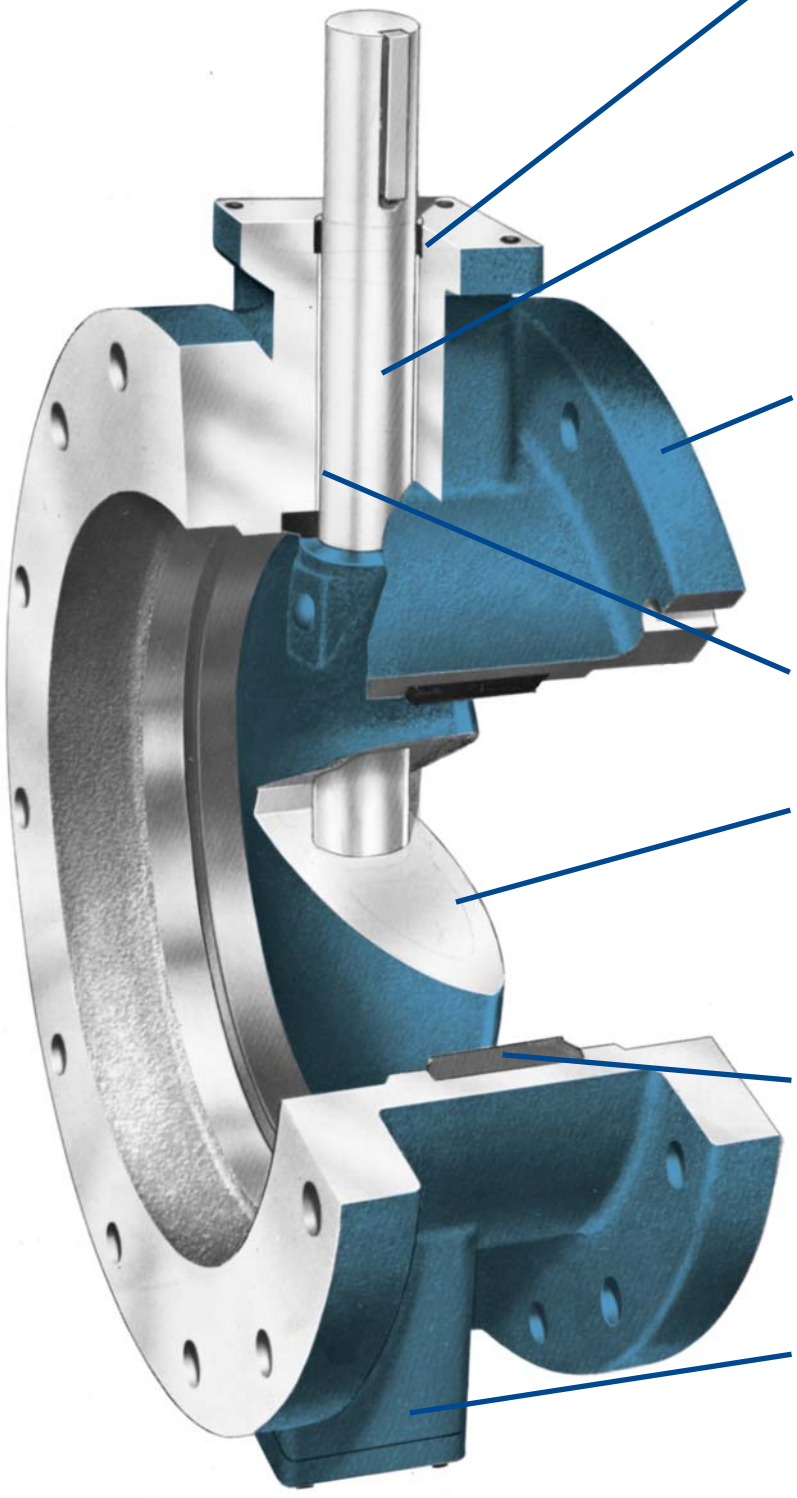
*Valves can be tested for 200 psi upon request.

GROUNDHOG® AWWA CLASS 150 B

Sizes	End Connection
4" – 48"	M/J x M/J
3" – 72"	Flg x Flg
6" – 36"	Flg x M/J
12", 16"	Push on x Push on
24" – 54"	Victaulic
12", 16"	Push on x Flg

For end connections other than those listed, please contact Pratt.

Site tested and proven for over 40 years!!!
Design Details 4" – 20" Groundhog®
Buried Service Butterfly Valve



Chevron V Packing
Packing is self-adjusting, long lasting and should never need replacement because quarter-turn valve operation causes little or no wear. Packing bears on turned, ground and polished stainless steel.

Corrosion Resistant Shaft
To prevent corrosion of a vital structural component, shaft is constructed of Type 304 stainless steel which affords protection against the harmful effects of corrosion. Shaft is one-piece, through-shaft construction sized to meet or exceed requirements of AWWA Standard C504 for Class 150B service.

Heavy Duty Body
Cast iron body is extra heavy with flanges fully faced and drilled per ANSI B16.1 Class 125 Standard for cast-iron flanges. Other ends, including integrally cast mechanical joint, push-on (for DI and PVC C900), wafer, and Victaulic coupling ends are also available. Operator mounting trunnion is machined and drilled for four-bolt connection.

Self-Lubricating Bearings
Chemically inert nylon bearings, liberally sized, are self-lubricating. These bearings should outlast the life of the pipeline.

Streamlined Disc
Lens-shaped disc is designed to minimize pressure drop and turbulence. Full open valve creates no more friction loss than a 45° elbow. Disc is secured to the shaft by stainless steel pins sized to transmit torques required and withstand stresses imposed under severe operating conditions. Disc is cast iron ASTM A 126 Class B with Type 316 stainless steel disc edge.

Body Seat
Seat is a special rubber compounded in the Henry Pratt materials laboratory. It is bonded to the body by a patented process requiring skilled technicians and special machinery. The result is a seat that cannot be torn from the body under normal pipeline conditions. The precision molding process also insures that the disc-seat indentation cannot cause excessive wear or abrasion upon closing.

Tamper-Proof Disc Centering
Precision molded flats in the bonded seat at the body trunnion mate with machined flats on the disc to provide tamper-proof centering of the disc in the body. Positive disc alignment without play is maintained, assuring long seat life.

The Henry Pratt Seat on Body Design Advantage

A key aspect of butterfly valve design relates to location of the rubber seat. Essentially the seat can be positioned on the body or on the disc per AWWA C504.

But the sum of Pratt design, testing, and field experience has proven conclusively that ***seat on body design is preferred*** because it provides maximum reliability.

The ***major advantage of seat on body design*** is that the risk of damage to the rubber seat is minimized because the sealing edge of the disc is much harder than any corrosion deposits built up within the valve body or pipeline. (See Figures 1 and 2) This is important because build up can interfere with the swing radius of the disc. Additionally, seats on body are recessed and thus more protected than seat on disc designs.

Seat on disc designs are much more susceptible to damage because it is the relatively soft rubber seat on the disc that comes into contact with corrosion deposits and build up. Also any solid materials flowing in the fluid can impinge on a rubber seat located on the disc. (See Figure 3)

Another disadvantage of seat on disc design is that since the maximum velocity in a pipeline occurs at the upstream and downstream leading edges of the disc, the rubber seat on disc designs are much more susceptible to wear, vibration and potential loosening of hardware.

Conclusion: Henry Pratt seat on body designs which do not depend on retaining hardware in the waterway for seat retention have recognized these potential problems and addressed them in advance. Successful field performance has substantiated the credibility of this design approach!!

Pratt – Rubber Seat on Body Designs

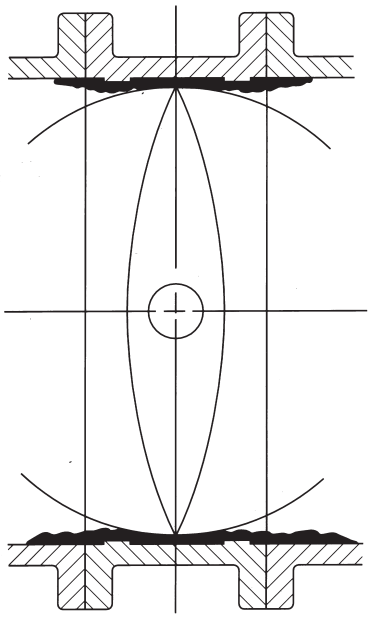


FIGURE 1

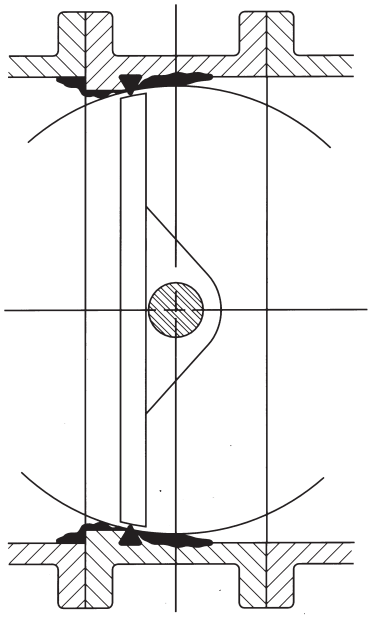


FIGURE 2

Rubber Seat on Disc Design by Others

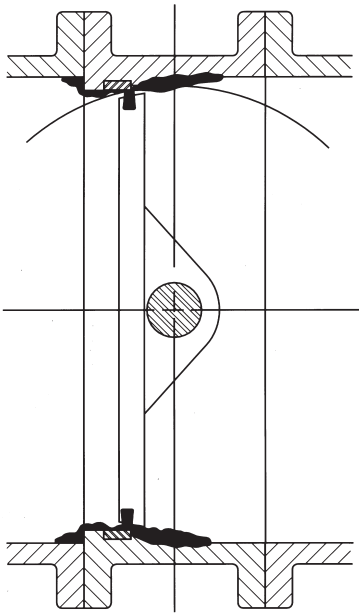


FIGURE 3

GROUNDHOG® BUTTERFLY VALVE
AWWA C504 CLASS 150B FOR BURIED SERVICE

SUGGESTED SPECIFICATION

All butterfly valves shall be manufactured in accordance with the latest revision of AWWA C504 for Class 150B service and comply with the following details:

Valve Bodies shall be constructed of cast iron ASTM A-126 Class B and conform to AWWA C504 in terms of laying lengths and minimum body shell thickness. End connections shall be as specified on the plans.

Valve Discs shall also be made from cast iron ASTM A-126 Class B in sizes 20" and smaller. Sizes 24" and larger shall be built from ductile iron in conformance to ASTM A-536. Disc shall be furnished with Type 316 stainless steel seating edge to mate with the rubber seat on the body.

Valve Seat shall be Buna-N rubber located on the valve body. In sizes 20" and smaller, valves shall have bonded seats that meet test procedures outlined in ASTM D-429 Method B. Sizes 24" and larger shall be retained in the valve body by mechanical means without use of metal retainers or other devices located in the flow stream.

Valve Shafts shall be Type 304 stainless steel conforming to ASTM A-276. Shaft seals shall be standard self-adjusting split V packing. Shaft seals shall be of a design allowing replacement without removing the valve shaft.

Valve Bearings shall be sleeve type that are corrosion resistant and self-lubricating.

Valve Actuators shall be fully grease packed and have stops in the open/close position. The actuator shall have a mechanical stop which will withstand an input torque of 450 ft. lbs. against the stop. The traveling nut shall engage alignment grooves in the housing. The actuators shall have a built in packing leak bypass to eliminate possible packing leakage into the actuator housing.

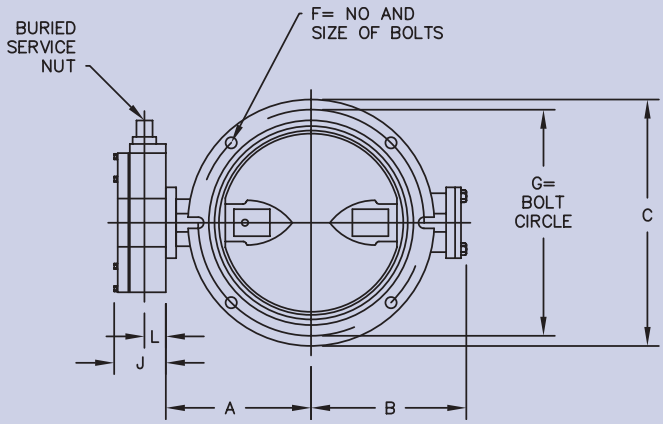
The ***Valve Interior*** and ***Exterior Surfaces*** except for seating shall be coated with Ameron Amerlock 370 in accordance with AWWA C550 and C504. All internal and/or external surfaces shall be covered with a polyamide cured epoxy coating applied over a sand blasted “new white metal surface" per SSPC-SP10 to a minimum of 6 mils in compliance with AWWA C550.

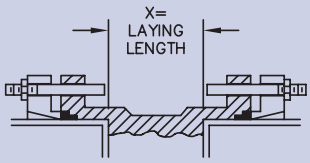
MECHANICAL JOINT 4" – 20"

Actuator Size	J	L	M	N	P	Q	R
MDT-2S	4 1/16	2	2 1/8	2	4 1/2	4 1/4	8 1/4
MDT-3S	5 1/8	2 7/16	3 1/4	3 5/32	5 5/8	5 3/8	10 3/8
MDT-4S	6 3/8	2 27/32	3 3/8	4	7 5/16	6 3/4	11 5/16
MDT-5	7 9/16	3 15/32	4 1/2	5 1/2	8 3/4	10	17

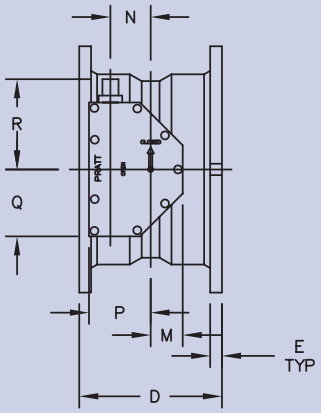
Valve Size	A	B	C	D	E	F	G	X
4	5 1/2	3 1/2	9	8 1/8	1	4 3/4	7 1/2	3 1/8
6	6 1/2	5 1/8	11	8 1/2	1 1/16	6 3/4	9 1/2	3 1/2
8	7 3/4	6 1/2	13 1/4	8 5/8	1 1/8	6 3/4	11 3/4	3 5/8
10	9	9 3/4	15 5/16	9 1/4	1 3/16	8 3/4	14	4 1/4
12	10 1/2	11 3/8	17 5/16	9 1/4	1 1/4	8 3/4	16 1/4	4 1/4
14	11 7/8	12 3/4	20 3/16	11 1/2	1 5/16	10 3/4	18 3/4	4 1/2
16	13 1/2	14 1/2	22 3/16	12	1 3/8	12 3/4	21	5
18	14 3/8	15 3/8	24 1/16	12 1/4	1 3/8	12 3/4	23 1/4	5 1/4
20	16	17	27 3/32	12 1/2	1 1/2	14 3/4	25 1/2	5 1/2

NOTES:
1. ALL DIMENSIONS SHOWN IN INCHES. "D" DIMENSION ±1/16" FOR 3" THRU 10" VALVES. "D" DIMENSION ±1/8" FOR 12" THRU 20" VALVES.
2. DIMENSIONS AND DRILLING OF END FLANGES CONFORM TO THE AMERICAN CAST IRON FLANGE STANDARDS, CLASS 125 (B16.1).
3. (RECOMMENDATIONS FOR MATING FLANGES) WHERE INSULATING BUSHINGS ARE USED, IT IS NECESSARY THAT BOLT HOLES BE DRILLED OVERSIZE BY AN AMOUNT EQUAL TO TWO TIMES THE INSULATING SLEEVE THICKNESS TO MAINTAIN THE SAME MINIMUM CLEARANCE FOR BOLTS.
4. VALVES MANUFACTURED AND TESTED IN ACCORDANCE WITH AWWA SPECIFICATIONS C-504-LATEST REVISION CLASS 150B.
5. SEE DRAWING GA-11486 FOR VALVE CROSS SECTION.
6. CAUTION: WHEN USING 10" AND 12" VALVES ON CLASS 200 PVC PIPE, PIPE END I.D. MUST BE BEVELLED TO ENSURE CLEARANCE FOR DISC AND PROPER VALVE OPERATION.





INSTALLATION DIAGRAM
BOLTS, NUTS, GLANDS AND GASKETS FURNISHED BY OTHERS

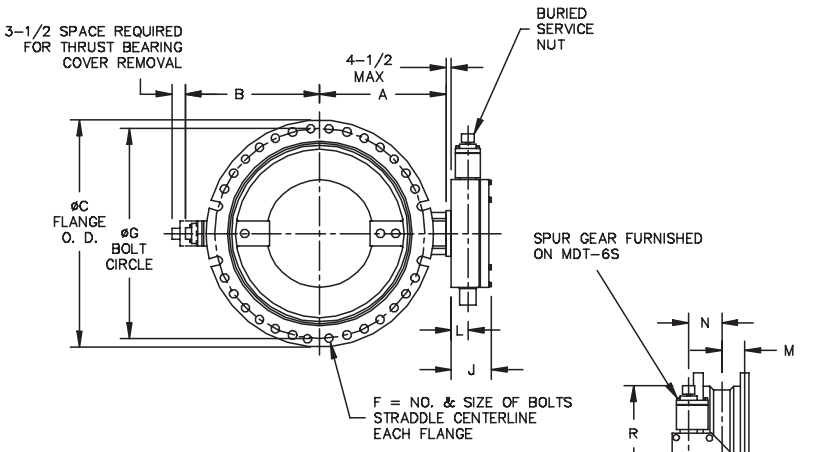


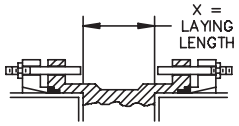
MECHANICAL JOINT 24" – 48"

Actuator Size	J	L	M	N	P	Q	R
MDT-2S	4 1/16	2	2 1/8	2	4 1/2	4 1/4	8 1/4
MDT-3S	5 1/8	2 7/16	3 1/4	3 5/32	5 5/8	5 3/8	10 3/8
MDT-4S	6 3/8	3 1/16	3 3/8	4	7 5/16	6 3/4	11 5/16
MDT-5	7 9/16	3 1/2	4 1/2	5 1/2	8 3/4	10 7/16	17
MDT-5S	8 5/16	3 15/16	5 5/8	7	10 5/8	15 15/16	19 3/8
MDT-6S	11 1/8	5 1/16	7	8 1/4	12 3/4	18 5/8	26 1/2

Valve Size	A	B	C	D	E	F	G	X
24	18 5/8	18 5/8	31 5/16	13 1/4	1 5/8	16 3/4	30	6 3/8
30	21 1/2	24 3/8	39	18	1 13/16	20 1	36 5/8	10
36	25 7/16	28 1/4	45 5/8	22	2	24 1	43 3/4	14
42	29 7/8	32 7/8	53	22	2	28 1 1/4	50 5/8	14
48	34 1/16	37 1/8	59 5/8	24	2	32 1 1/4	57 1/2	16

NOTES:
1. ALL DIMENSIONS SHOWN IN INCHES. "D" DIMENSION ±1/8" BOLT HOLES WILL BE 1/8" LARGER THAN DIAMETER OF BOLT.
2. DIMENSIONS AND DRILLING OF MECHANICAL JOINT ENDS CONFORM TO ANSI AWWA C111/A21.11.
3. CAUTION: IT IS RECOMMENDED THAT VALVES BE INSTALLED INTO THE PIPING SYSTEM IN ACCORDANCE WITH AWWA M-11 IN ORDER TO PREVENT ANY UNDUE PIPING STRESS, DEFLECTION OR BENDING THAT MAY EFFECT THE PERFORMANCE OF THE VALVE.
4. VALVES MANUFACTURED AND TESTED IN ACCORDANCE WITH AWWA SPECIFICATIONS C-504-LATEST REVISION CLASS 150B.
5. CAUTION: WHEN USING 10" AND 12" VALVES ON CLASS 200 PVC PIPE, PIPE END I.D. MUST BE BEVELLED TO ENSURE CLEARANCE FOR DISC AND PROPER VALVE OPERATION.





INSTALLATION DIAGRAM
BOLTS, NUTS, GLANDS AND GASKETS FURNISHED BY OTHERS

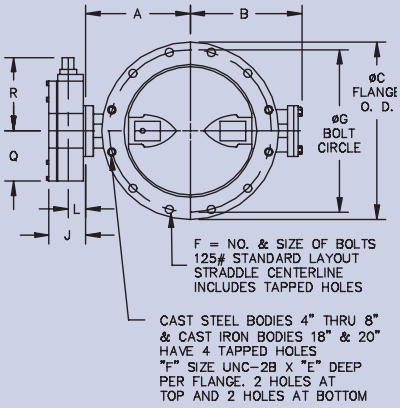
ACTUATOR POSITION 1

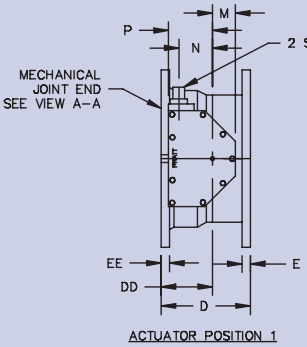
Flanged x Mechanical Joint 6" – 20"

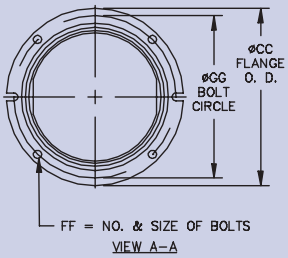
Valve Size	A	B	C	CC	D	DD	E	EE	F	FF	G	GG	X
6	6½	5⅛	11	11	6¾	4¼	1⅛	1⅛	8 ¾	6 ¾	9½	9½	4¼
8	7¾	6½	13½	13¼	7⅜	4⅜	1⅛	1⅛	8 ¾	6 ¾	11¾	11¾	4 13/16
10	9	9⅛	16	15⅜	8⅝	4⅝	1¼	1⅜	12 ⅞	8 ¾	14¼	14	6⅛
12	10½	11⅜	19	17⅝	8⅝	4⅝	1¼	1¼	12 ⅞	8 ¾	17	16¼	6⅛
14	11⅞	12¾	21	20⅜	9¾	5¾	1⅜	1⅝	12 1	10 ¾	18¾	18¾	6¼
16	13½	14⅜	23½	22⅜	10	6	1⅞	1⅜	16 1	12 ¾	21¼	21	6½
18	14⅜	15¼	25	24 1/16	10⅛	6⅛	1⅜	1⅞	16 1⅛	12 ¾	22¾	23¼	6⅝
20	16	16⅞	27½	27 3/32	10¼	6¼	1 1/16	1½	20 1⅛	14 ¾	25	25½	6¾

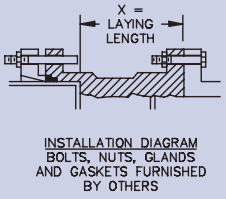
Actuator Size	J	L	M	N	P	Q	R
MDT-2S	4 1/16	2	2⅛	2	4½	4½	8¼
MDT-3S	5⅝	2 1/16	3¼	3 3/32	5⅝	5⅜	10⅜
MDT-4S	6⅜	2 7/32	3⅜	4	7 5/16	6¾	11 5/16
MDT-5	7 5/16	3 15/32	4½	5½	8¾	10	17

NOTES:
1. ALL DIMENSIONS SHOWN IN INCHES.
2. "D" DIMENSION ±1/16" FOR 6" THRU 10" VALVES. "D" DIMENSION ±1/8" FOR 12" THRU 20" VALVES.
3. FOR BOLTS SMALLER THAN 1-3/4", BOLT HOLES WILL BE 1/8" LARGER THAN DIAMETER OF BOLT. FOR BOLTS 1-3/4" OR LARGER, BOLT HOLES WILL BE 1/4" LARGER THAN DIAMETER OF BOLT.
4. DIMENSIONS AND DRILLING END FLANGE CONFORM TO THE AMERICAN CAST IRON FLANGE STANDARDS, CLASS 125 (B16.1).
5. DIMENSIONS AND DRILLING OF MECHANICAL JOINT END CONFORM TO ANSI/AWWA C111/A21.11.
6. VALVES MANUFACTURED AND TESTED IN ACCORDANCE WITH AWWA SPECIFICATION C-504 CLASS 150B.
7. RECOMMENDATION FOR MATING FLANGES: WHERE INSULATING BUSHINGS ARE USED, IT IS NECESSARY THAT BOLT HOLES BE DRILLED OVERSIZE BY AN AMOUNT EQUAL TO TWO TIMES THE INSULATING SLEEVE THICKNESS TO MAINTAIN THE SAME MINIMUM CLEARANCE FOR BOLTS.
8. CAUTION: WHEN USING 10" AND 12" VALVES ON CLASS 200 PVC PIPE, PIPE END I.D. MUST BE BEVELLED TO ENSURE CLEARANCE FOR DISC AND PROPER VALVE OPERATION.







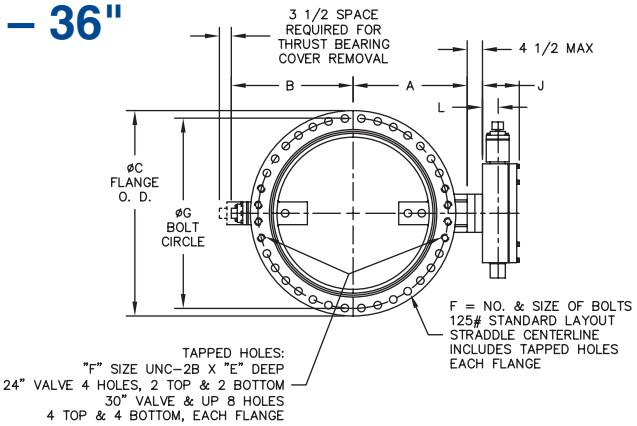


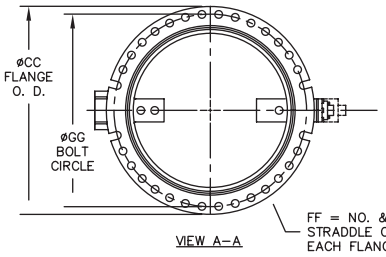
Flanged x Mechanical Joint 24" – 36"

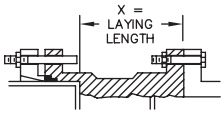
Valve Size	A	B	C	CC	D	DD	E	EE	F	FF	G	GG	X
24	18⅝	18⅝	32	31⅜	10⅝	6⅝	1⅞	1⅝	20 1¼	16/3/4	29½	30	7⅛
30	21½	24⅜	38¾	39	15	9	2⅛	1 13/16	28 1¼	20/1	36	36⅞	11
36	25 7/16	28¼	46	45⅝	17	11	2⅜	2	32 1½	24/1	42¾	43¾	13

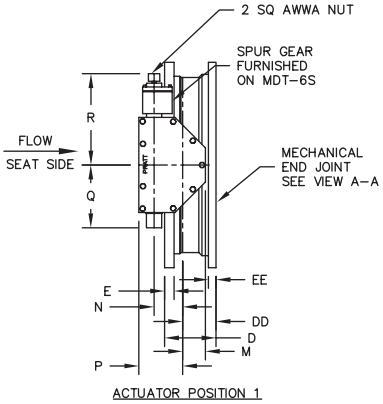
Actuator Size	J	L	M	N	P	Q	R
MDT-4S	6⅜	2 7/32	3⅜	4	7 5/16	6¾	11 5/16
MDT-5	7 5/16	3 15/32	4½	5½	8¾	10	17
MDT-5S	8 5/16	3 15/16	5½	7	10½	15 15/16	19¾
MDT-6S	10 3/16	5 1/16	7	8¼	12⅝	14 3/16	26½

NOTES:
1. ALL DIMENSIONS SHOWN IN INCHES.
2. "D" DIMENSION ±1/16" FOR 6" THRU 10" VALVES. "D" DIMENSION ±1/8" FOR 12" THRU 20" VALVES.
3. FOR BOLTS SMALLER THAN 1-3/4, BOLT HOLES WILL BE 1/8" LONGER THAN DIAMETER OF BOLT. FOR BOLTS 1-3/4 OR LARGER, BOLT HOLES WILL BE 1/4" LARGER THAN DIAMETER OF BOLT.
4. DIMENSIONS AND DRILLING OF END FLANGE CONFORM TO THE AMERICAN CAST IRON FLANGE STANDARDS, CLASS 125 (B16.1).
5. DIMENSIONS AND DRILLING OF MECHANICAL JOINT END CONFORM TO ANSI/AWWA C111/A21.11.
6. VALVES MANUFACTURED AND TESTED IN ACCORDANCE WITH AWWA SPECIFICATION C-504 LATEST REVISION, CLASS 150B.
7. RECOMMENDATION FOR MATING FLANGES: WHERE INSULATING BUSHINGS ARE USED, IT IS NECESSARY THAT BOLT HOLES BE DRILLED OVERSIZE BY AN AMOUNT EQUAL TO TWO TIMES THE INSULATING SLEEVE THICKNESS TO MAINTAIN THE SAME MINIMUM CLEARANCE FOR BOLTS.
8. CAUTION: WHEN USING 10" AND 12" VALVES ON CLASS 200 PVC PIPE, PIPE END I.D. MUST BE BEVELLED TO ENSURE CLEARANCE FOR DISC AND PROPER VALVE OPERATION.







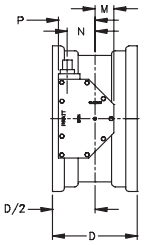


PUSH-ON JOINT ENDS 12", 16"

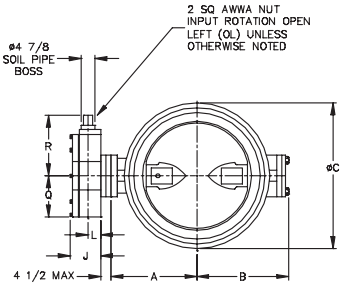
Pipe Size	Pipe O.D.	Min. Mating I.D.
12	13.20	10.97
16	17.80	14.59

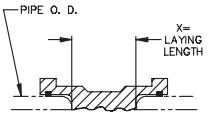
Valve Size	A	B	C	D	X
12	10½	11⅜	16⅜	15	5⅛
16	13½	14½	21¼	15	4¾

Actuator Size	J	L	M	N	P	Q	R
MDT-2S	4 1/16	2	2⅛	2	4½	4½	8¼
MDT-3S	5⅝	2 7/16	3¼	3 5/32	5⅝	5⅜	10⅜
MDT-4S	6⅜	2 27/32	3⅜	4	7 5/16	6¾	11 5/16
MDT-5	7 5/16	3 5/32	4½	5½	8¾	10	17



ACTUATOR POSITION 1





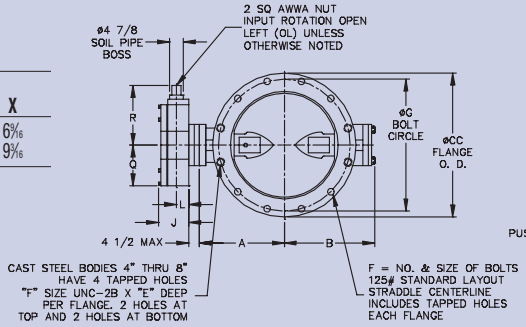
INSTALLATION DIAGRAM
RUBBER RING GASKETS
FURNISHED BY OTHERS

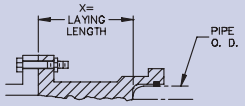
NOTES:
1. ALL DIMENSIONS SHOWN IN INCHES.
2. "D" DIMENSION ±1/16" FOR 4" THRU 10" VALVES.
   "D" DIMENSION ±1/8" FOR 12" THRU 16" VALVES.
3. VALVES MANUFACTURED AND TESTED IN ACCORDANCE WITH AWWA SPECIFICATION C-504 LATEST REVISION, CLASS 150B.
4. USE WITH "TYTON" RUBBER RING GASKET (REGISTERED TRADEMARK OF U.S. PIPE AND FOUNDRY CO.).
5. THE VALVE IS DESIGNED FOR IRON OR PVC PIPE WITH CAST IRON EQUIVALENT O.D.'S (NOT FOR USE WITH IPS O. D. PIPE).
6. EXTENSION STEM CAN BE USED WITH STANDARD VALVE BOXES OR 5" SOIL PIPE.
7. ALSO AVAILABLE IN 24" SIZE, DIMENSIONS AVAILABLE UPON REQUEST.

12", 16" PUSH-ON X FLANGE

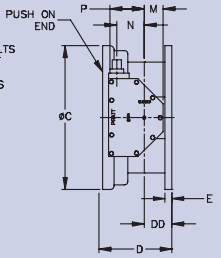
Valve Size	A	B	C	CC	D	DD	E	F	G	X
12	10½	11⅜	16⅜	19	11½	4	1¼	12 ⅞	17	6 9/16
16	13½	13⅜	21¼	23½	11½	4	1 1/16	16 1	21¼	9 9/16

Actuator Size	J	L	M	N	P	Q	R
MDT-2S	4 1/16	2	2⅛	2	4½	4½	8¼
MDT-3S	5⅝	2 7/16	3¼	3 5/32	5⅝	5⅜	10⅜
MDT-4S	6⅜	2 27/32	3⅜	4	7 5/16	6¾	11 5/16
MDT-5	7 5/16	3 5/32	4½	5½	8¾	10	17





INSTALLATION DIAGRAM
BOLTS, NUTS, GLANDS
AND GASKETS FURNISHED
BY OTHERS



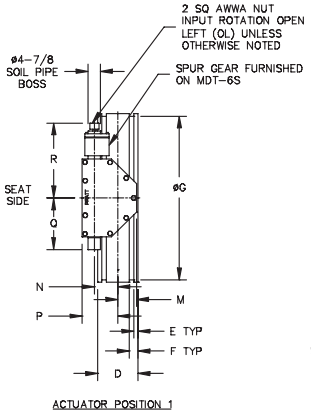
ACTUATOR POSITION 1

NOTES:
1. ALL DIMENSIONS SHOWN IN INCHES.
2. "D" DIMENSION ±1/16" FOR 4" THRU 10" VALVES.
   "D" DIMENSION ±1/8" FOR 12" THRU 16" VALVES.
3. FOR BOLTS SMALLER THAN 1-3/4, BOLT HOLES WILL BE 1/8" LONGER THAN DIAMETER OF BOLT. FOR BOLTS 1-3/4 OR LARGER, BOLT HOLES WILL BE 1/4" LARGER THAN DIAMETER OF BOLT.
4. DIMENSIONS AND DRILLING OF END FLANGE CONFORM TO THE AMERICAN CAST IRON FLANGE STANDARDS, CLASS 125 (B16.1).
5. VALVES MANUFACTURED AND TESTED IN ACCORDANCE WITH AWWA SPECIFICATION C-504 LATEST REVISION, CLASS 150B.
6. RECOMMENDATION FOR MATING FLANGES: WHERE INSULATING BUSHINGS ARE USED, IT IS NECESSARY THAT BOLT HOLES BE DRILLED OVERSIZE BY AN AMOUNT EQUAL TO TWO TIMES THE INSULATING SLEEVE THICKNESS TO MAINTAIN THE SAME MINIMUM CLEARANCE FOR BOLTS.
7. THE VALVE IS DESIGNED FOR IRON OR PVC PIPE WITH CAST IRON EQUIVALENT O.D.'S (NOT FOR USE WITH IPS O. D. PIPE).
8. USE WITH "TYTON" RUBBER RING GASKET (REGISTERED TRADEMARK OF U.S. PIPE AND FOUNDRY CO.).

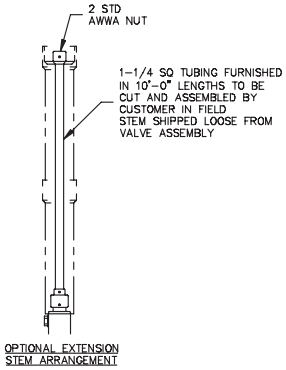
VICTAULIC 24" – 54"

Valve Size	A	B	C	D	E	F	G	H
24	18⅝	18⅜	27⅛	12½	1 1/16	2 3/16	26 19/32	26
30	21½	24 3/16	33¾	18	1¼	2 25/32	33	34⅛
36	25 1/16	28 1/16	40 3/16	22	1¾	2 25/32	39 7/16	40 3/16
42	29⅛	32 1/16	46⅞	22	1¾	3 1/32	45 13/16	47⅛
48	34 1/16	36⅞	53⅛	24	1¾	3 1/32	52 3/16	53⅝
54	37½	40 11/16	59 11/16	24	1¾	3 9/32	58⅝	60 3/16

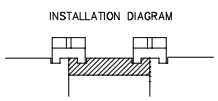
Actuator Size	J	L	M	N	P	Q	R
MDT-4S	6⅜	2 27/32	3⅜	4	7 5/16	6¾	11 5/16
MDT-5	7 5/16	3 5/32	4½	5½	8¾	10	17
MDT-5S	8 5/16	3 5/16	5½	7	10½	15 15/16	19¼
MDT-6S	10 1/16	5 1/16	7	8¼	12⅜	14 3/16	26½

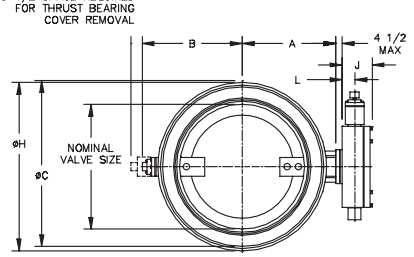


ACTUATOR POSITION 1



OPTIONAL EXTENSION
STEM ARRANGEMENT


INSTALLATION DIAGRAM
VICTAULIC COUPLINGS, GLANDS
AND GASKETS FURNISHED BY
OTHERS UNLESS OTHERWISE
SPECIFIED



NOTES:
1. ALL DIMENSIONS SHOWN IN INCHES.
2. "D" DIMENSION +1/8"
3. VALVES MANUFACTURED AND TESTED IN ACCORDANCE WITH AWWA SPECIFICATION C-504 LATEST REVISION, CLASS 150B.
4. CAUTION: IT IS RECOMMENDED THAT VALVES BE INSTALLED INTO PIPING SYSTEM IN ACCORDANCE WITH AWWA M-11 TO PREVENT ANY UNDUE PIPING STRESS, DEFLECTION OR BEDNING THAT MAY EFFECT THE PERFORMANCE OF THE VALVE.
5. EXTENSION STEM CAN BE USED WITH STANDARD VALVE BOXES OR 5" SOIL PIPE.

Buried Service Actuators

Built Extra Strong and Water Tight for Years of Trouble Free Service

Rugged, Feature Packed Construction

Designed and developed by Henry Pratt specifically for buried service, GROUNDHOG® valve actuators exceed the rigid operating requirements of AWWA Standard C504. They are traveling nut type and are self-locking without a unidirectional sustained force from the valve. Unlike some actuators of other designs GROUNDHOG® actuators can be relied upon to maintain exact valve position under conditions of fluctuating, turbulent and intermittent flow, yet one man can smoothly and easily operate the valve. Stop limiting devices are provided and are capable of withstanding 1½ times the AWWA C504 standard input torque at full open or closed positions without damage to the valve or actuator.

Moisture Resistant

These rugged actuators are lubricated for the life of the valve. They can be operated without maintenance in underground-water conditions because of their grease-packed construction. As long as the cover, gasket and seals remain intact, there is no need to worry about damage resulting from water infiltration.

Smooth Operation

On 4" through 12" valve sizes operation is linear, with valve opening approximately in proportion to the turns of the nut. In sizes 14" and larger, a link-lever arrangement provides characterized closure, which minimizes the possibility of line shock by slowing down valve travel as the valve approaches the closed position.

TURNS REQUIRED TO OPEN OR CLOSE

Valve Size	Typical MDT Size	No. of Turns
4" – 12"	MDT-2S	32
14" – 16"	MDT-3S	30
18" – 24"	MDT-4S	40
30"	MDT-5	44
36"	MDT-5 MDT-5S	44 136
42"	MDT-5S MDT-6S	136 215
48"	MDT-6S	215

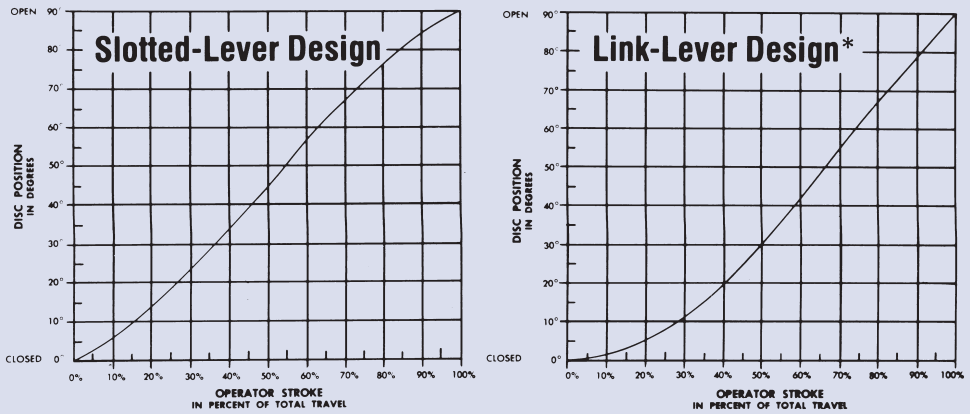
NOTE: 54" – 72" turns on request

SLOTTED-LEVER (4" – 12")

LINK-LEVER (14" – 48")

1. **Housing –** Provides structural support plus protection for internal operating mechanism. Mounts to valve trunnion with four bolts. Gasket between housing and cover prevents infiltration of dirt and moisture.
2. **Screw Rod –** Precision-machined, high strength steel.
3. **Stop Limiting Collars –** Built-in, threaded into position and pinned. Meet or exceed AWWA C504 Standard for input torque requirements to eliminate the possibility of damage to actuator housing, mechanism or disc-shaft assembly.
4. **Lever –** Rugged casting built to transmit torques from slider nut to valve shaft. On link-lever design, takes up higher portion of nut movement at the “closing” end of the screw. (Refer to actuator characteristic curves below.)
5. **Key –** Actuator is keyed to valve shaft for positive connection of two units.
6. **Slider Nut –** Precision machined to mate perfectly with screw rod and lever. Capable of withstanding 450 ft. lb. input torque against stop collar.
7. **Dual-Link Construction –** One link above the screw (shown) and one below (hidden), adds strength and prevents misalignment and jamming of slider nut.

Actuator Characteristic Curves



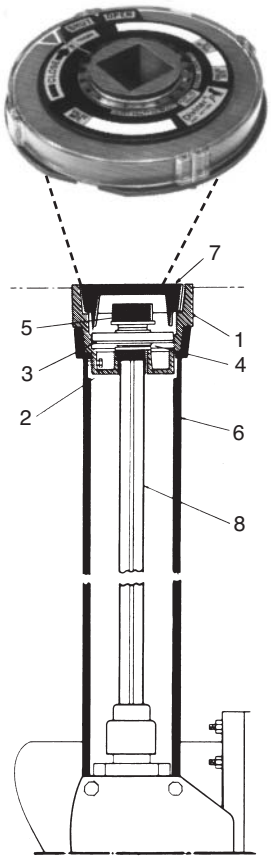
*Curve is approximate. Exact characteristic varies with size of valve and operator.

DIVINER®
GROUND LEVEL POSITION INDICATOR

The Pratt Diviner® position indicator is a useful accessory that identifies valve position at a glance, as well as direction and number of turns to open or close completely. This durable indicator is designed for simple operation, strength and reliability. All working parts are constructed of non-metallic material that is virtually indestructible in this kind of service. Hermetically sealed, the internal gearing is protected from the elements with a clear, tough plastic cover.

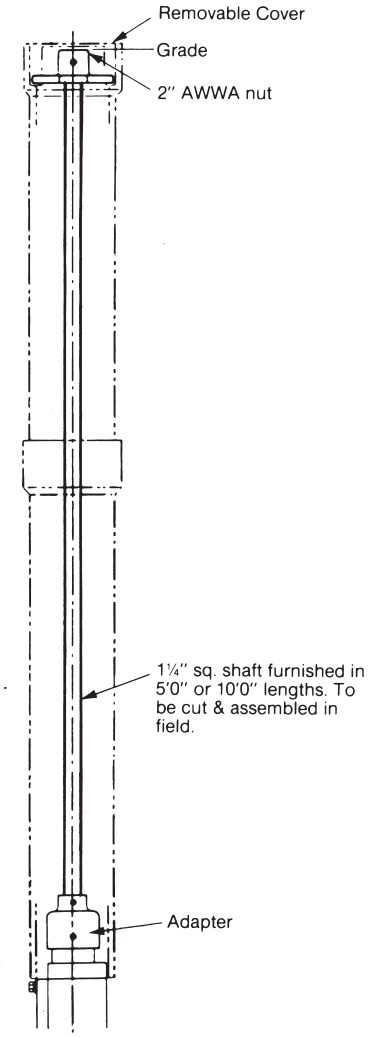
The Diviner® position indicator is shipped for field assembly complete with cast iron adapter (1) and cap screws, guide bushings (2), position indicator (3), flexible washer (4), and a two-inch square AWWA nut (5) with set screw. The adapter fits a standard 5 1/4 inch valve box (6) or 5 inch cast iron soil pipe bell utilizing a cast cover with skirt depth of 1" or less (7). Extension stems (8) are available in 5-foot and 10-foot lengths and can be ordered separately at extra cost.

The device is designed for use with valves requiring 250 turns or less. Specify number of turns required for valves not made by Henry Pratt.



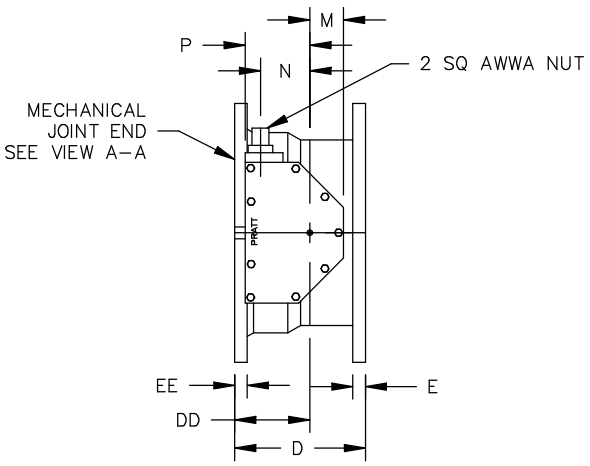
Typical application in 5" Soilpipe.

Extension Stem

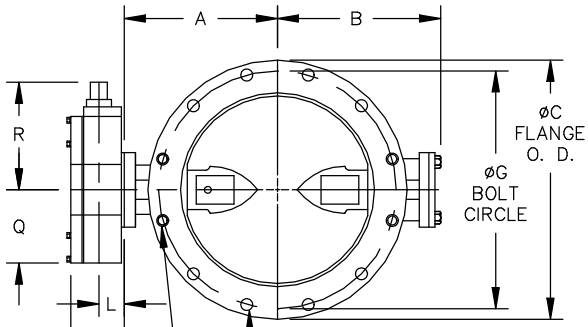


VALVE SIZE	A	B	C	CC	D	DD	E	EE	F	FF	G	GG	X
6	6-1/2	5-1/8	11	11	6-3/4	4-1/4	1-1/16	1-1/16	8--3/4	6--3/4	9-1/2	9-1/2	4-1/4
8	7-3/4	6-1/2	13-1/2	13-1/4	7-5/16	4-5/16	1-1/8	1-1/8	8--3/4	6--3/4	11-3/4	11-3/4	4-13/16
10	9	9-7/8	16	15-9/16	8-5/8	4-5/8	1-1/4	1-3/16	12--7/8	8--3/4	14-1/4	14	6-1/8
12	10-1/2	11-3/8	19	17-15/16	8-5/8	4-5/8	1-1/4	1-1/4	12--7/8	8--3/4	17	16-1/4	6-1/8
14	11-7/8	12-3/4	21	20-5/16	9-3/4	5-3/4	1-3/8	1-5/16	12--1	10--3/4	18-3/4	18-3/4	6-1/4
16	13-1/2	14-3/8	23-1/2	22-9/16	10	6	1-7/16	1-3/8	16--1	12--3/4	21-1/4	21	6-1/2
18	14-3/8	15-1/4	25	24-11/16	10-1/8	6-1/8	1-9/16	1-7/16	16--1-1/8	12--3/4	22-3/4	23-1/4	6-5/8
20	16	16-7/8	27-1/2	27-3/32	10-1/4	6-1/4	1-11/16	1-1/2	20--1-1/8	14--3/4	25	25-1/2	6-3/4

ACTUATOR SIZE	J	L	M	N	P	Q	R	NUMBER OF TURNS
MDT-2S	4-11/16	2	2-1/8	2	4-1/2	4-1/2	8-1/4	32
MDT-3S	5-5/8	2-7/16	3-1/4	3-5/32	5-5/8	5-3/8	10-3/8	30
MDT-4S	6-3/8	2-27/32	3-3/8	4	7-5/16	6-3/4	11-5/16	40
MDT-5	7-9/16	3-15/32	4-1/2	5-1/2	8-3/4	10	17	44

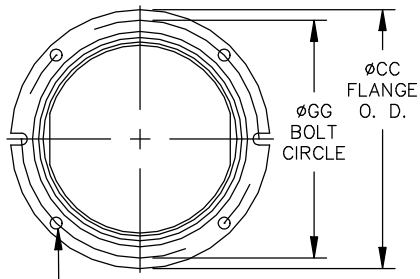


ACTUATOR POSITION 1



F = NO. & SIZE OF BOLTS
125# STANDARD LAYOUT
STRADDLE CENTERLINE
INCLUDES TAPPED HOLES

CAST STEEL BODIES 4" THRU 8"
& CAST IRON BODIES 18" & 20"
HAVE 4 TAPPED HOLES
"F" SIZE UNC-2B X "E" DEEP
PER FLANGE. 2 HOLES AT
TOP AND 2 HOLES AT BOTTOM

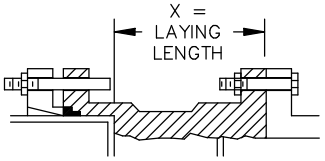


FF = NO. & SIZE OF BOLTS

VIEW A-A

NOTES:

1. ALL DIMENSIONS SHOWN IN INCHES.
2. "D" DIMENSION ±1/16" FOR 6" THRU 10" VALVES.
   "D" DIMENSION ±1/8" FOR 12" THRU 20" VALVES.
3. FOR BOLTS SMALLER THAN ø1-3/4, BOLT HOLES WILL BE 1/8" LARGER THAN DIAMETER OF BOLT.
   FOR BOLTS ø1-3/4 OR LARGER, BOLT HOLES WILL BE 1/4" LARGER THAN DIAMETER OF BOLT.
4. DIMENSIONS AND DRILLING OF END FLANGE CONFORM TO THE AMERICAN CAST IRON FLANGE STANDARDS, CLASS 125 (B16.1).
5. DIMENSIONS AND DRILLING OF MECHANICAL JOINT END CONFORM TO ANSI/ AWWA C111/ A21.11.
6. VALVES MANUFACTURED & TESTED IN ACCORDANCE WITH AWWA SPECIFICATION C-504 LATEST REVISION, CLASS 150B.
7. RECOMMENDATION FOR MATING FLANGES: WHERE INSULATING BUSHINGS ARE USED, IT IS NECESSARY THAT BOLT HOLES BE DRILLED OVERSIZE BY AN AMOUNT EQUAL TO TWO TIMES THE INSULATING SLEEVE THICKNESS TO MAINTAIN THE SAME MINIMUM CLEARANCE FOR BOLTS.



INSTALLATION DIAGRAM
BOLTS, NUTS, GLANDS
AND GASKETS FURNISHED
BY OTHERS

REV.	DATE	BY	DESCRIPTION	APP.

PRATT® HENRY PRATT COMPANY
AURORA, ILL.

6"-20" GROUNDHOG VALVE
FLANGE X MECHANICAL JOINT ENDS
MDT BURIED SERVICE NUT

SCALE NONE DATE 5-18-05
DRAWN BY ES CHECKED BY
APPROVED GA=BORDER
DRWG. NO. GA-11425 REV 0 A/C